Goal 1: Clean Air

The air in every American community will be safe and healthy to breathe. In particular, children, the elderly, and people with respiratory ailments will be protected from health risks of breathing polluted air. Reducing air pollution will also protect the environment, resulting in many benefits, such as restoring life in damaged ecosystems and reducing health risks to those whose subsistence depends directly on those ecosystems.

Background and Context

The average American breathes over 3,000 gallons of air each day. Air pollution contributes to illnesses such as cancer and to respiratory, developmental, and reproductive problems. Children are at greater risk because they are more active outdoors and their lungs are still developing. The elderly also are more sensitive to air pollution because they often have heart or lung disease.

Certain pollutants (such as some metals and certain organic chemicals) that are emitted from industrial and other sources can be deposited into water bodies and magnified through the food web, adversely affecting fish-eating animals and humans. Air pollution also makes soil and waterways more acidic, reduces visibility, and accelerates corrosion of buildings and monuments.

The air pollution problem is national and international in scope. Air pollution regularly crosses local and state lines and our borders. This causes problems not only for the population in urban areas, but also for less populated areas and national parks. Federal assistance and leadership are essential for developing and implementing

- Fine PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis, causing more use of medication and more doctor visits.

  PM is also a major cause of reduced visibility in parts of the United States, including many of our national parks. Particles can be carried over long distances by wind and then settle on ground or water. The effects of certain species of PM settling may include making lakes and streams acidic, changing the nutrient balance in coastal waters and watersheds, depleting the nutrients in soil, damaging sensitive forests and farm crops, and decreasing the diversity of ecosystems.

- Ground-level ozone (smog). When breathed at any concentration, ozone can irritate and inflame a person's airways. Health effects attributed to exposures to ozone, generally while individuals are engaged in moderate or heavy exertion, include significant decreases in lung function and increased respiratory symptoms such as chest pain and cough as concentrations rise. Exposures to ozone result in lung inflammation, aggravate respiratory diseases such as asthma, and may make people more susceptible to respiratory infection. Children who are active outdoors are

cooperative programs to prevent and control air pollution; for ensuring that national standards are met; and for providing tools for states, tribes, and local communities to use in preparing their clean air plans.

Criteria pollutants: To protect public health and the environment, EPA develops standards that limit concentrations of six major pollutants (known as criteria pollutants) that are linked to serious health and environmental problems:

- Particulate matter (PM). PM causes a wide variety of health and environmental problems. When exposed to higher concentrations of fine PM, people with existing lung or heart diseases - such as asthma, chronic obstructive pulmonary disease, congestive heart disease, or coronary artery disease - are at increased risk of health problems requiring hospitalization or of premature death. Similarly, children and people with existing lung disease may not be able to breathe as deeply or vigorously as they normally would and they may experience symptoms such as coughing and shortness of breath.

  most at risk for experiencing such effects. Other at-risk groups include adults who are active outdoors such as outdoor workers and individuals with respiratory disorders such as asthma. Ground-level ozone interferes with the ability of many plants to produce and store food, which reduces crop and forest yields by making plants more susceptible to disease, insects, other pollutants and harsh weather. It damages the leaves of trees and other plants, affecting the appearance of cities, national parks and recreation areas.

- Sulfur dioxide (SO_2). Peak levels of SO_2 can cause temporary breathing difficulty for people with asthma who are active outdoors. Longer-term exposure to a combination of SO_2 and fine particles can cause respiratory illness, alter the defense mechanisms of lungs, and aggravate cardiopulmonary disease. People who may be most susceptible to these effects include individuals with cardiovascular disease or chronic lung disease, as well as children and the elderly. SO_2 is also a major contributor to acidic deposition.

- Nitrogen dioxide (NO_2). Exposure to NO_2 causes respiratory symptoms such as coughing, wheezing, and shortness of breath in children and adults with respiratory diseases such as asthma. Even short exposures to NO_2 affect lung function. NO_2 also contributes to acidic deposition, eutrophication in coastal waters, and visibility problems.

- Carbon monoxide (CO). The health threat from even low levels of CO is most serious for those who suffer from heart disease, like angina, clogged arteries, or congestive heart disease. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise. Even healthy people can be affected by high levels of CO. People who breathe higher levels of CO can develop vision problems, experience reduced ability to work or learn, reduced manual dexterity, and have difficulty performing complex tasks. CO is most dangerous in enclosed or confined spaces and will cause death.

- Lead. Lead causes damage to the kidneys, liver, brain and nerves, and other organs. Excessive exposure to lead causes seizures, mental retardation, behavioral disorders, memory problems, and mood changes. Low levels of lead damage the brain and nerves in fetuses and young children, resulting in learning deficits and lowered IQ.

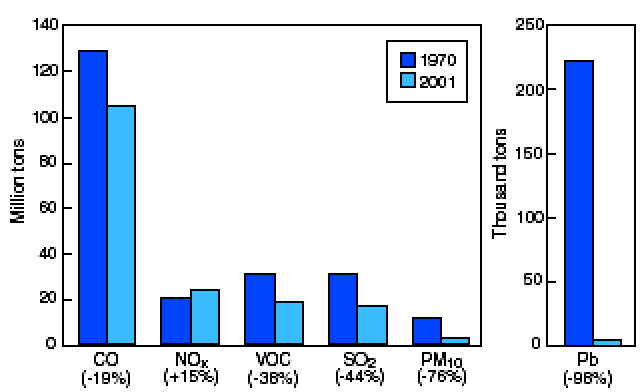
Hazardous air pollutants: Hazardous air pollutants (HAPs), commonly referred to as air toxics, are pollutants that are known or suspected to cause cancer or other serious health problems, such as reproductive effects or birth defects, or adverse environmental effects. EPA is working with state, local, and Tribal governments to reduce air releases of 188 pollutants listed in the Clean Air Act Amendments of 1990. Examples of air toxics include mercury, benzene, toluene, and xylene (BTX). HAPs are emitted from literally thousands of sources, including automobiles, trucks and buses. Adverse effects to human health and the environment due to HAPs can result from even low level exposure to air toxics from individual facilities, exposures to mixtures of pollutants found in urban settings, or exposure to pollutants emitted from distant sources that are transported through the atmosphere over regional, national, or even global airsheds.

Compared to information for the six criteria pollutants, the information about the ambient concentrations of HAPs and their potential health effects is relatively incomplete. Most of the information on the potential health effects of these pollutants is derived from experimental animal data. Of the 188 HAPs, almost 60 percent are classified by the Clean Air Act (section 112(f)(2)(A)) as known, probable, or possible carcinogens. One of the often documented ecological concerns associated with toxic air pollutants is the potential to damage aquatic ecosystems.

The Administration evaluated the Air Toxics program this past year using the Performance Assessment Rating Tool (PART). This evaluation found that the program's purpose is clear and the management of the program is good; however, the program has not clearly shown it is maximizing the program's net benefits and proposing the most cost-effective regulations. Furthermore, linkages are insufficient between annual performance goals and the long-term performance goal of protecting 95 percent of the United States population from unacceptable risks of cancer and other significant health problems from air toxic emissions. A moving baseline and data gaps for toxicity and actual population exposure limit the assessment of the program's results. In response to these findings, the Administration is requesting $7 million in increased funding for the Air Toxics program in state grants for monitoring to help fill these data gaps. In addition, the Administration will focus on maximizing programmatic net benefits, minimizing the cost per deleterious health effect avoided, and establishing better performance measures.

Acid rain: Emissions of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) react in the atmosphere and fall to earth as acid rain, causing acidification of lakes and streams and contributing to the damage of trees at high elevations. Acid deposition also accelerates the decay of building materials and paints and contributes to degradation of irreplaceable cultural objects, such as statues and sculptures. NO_x deposition also contributes to eutrophication of coastal waters, such as the Chesapeake Bay and Tampa Bay. Before falling to earth, SO_2 and NO_x gases form fine particles that are implicated in affecting public health by contributing to premature mortality, chronic bronchitis, and other respiratory problems. The fine particles also contribute to reduced visibility in national parks and elsewhere.

Comparison of 1970 and 2001 Emissions



Trends: The air in the United States is now the cleanest it has been during the 20 years that EPA has been tracking air quality. National air quality, measured at thousands of monitoring stations across the country, has shown improvements for all six major criteria pollutants: PM, ozone, SO2, NO2, CO, and lead. Over the last three decades, air pollution has declined by 25 percent, while our economy has grown over 160 percent. These gains have provided cleaner air for millions of people. There also have been dramatic reductions (10 to 25 percent) in sulfates deposited in many of the most acid sensitive ecosystems located in the Northeastern United States since implementation of EPA's acid rain program in 1995. This means that during the past 20 years, Americans have been able to breathe a little easier, see a little better, and enjoy a cleaner environment. Additional steps still need to be taken, however, to bring remaining areas with unhealthful air fully into compliance with health-based air quality standards and to protect sensitive ecosystems. Thus the nation faces a significant challenge in maintaining this historical trend of improving air quality, given expectations for future growth in the economy, the population, and highway vehicle use.

EPA tracks trends in six criteria air pollutants through an Air Quality Index that reflects the number of days that any health-based standard is violated. The percentage of days across the country that air quality violated a health standard has dropped from almost 10 percent in 1988 to 3 percent in 2000. Even on those days, the standard was generally violated only for a few hours, although these violations tend to be in late afternoon hours when many children and adults are outside engaging in work and exercise that increases the impact of exposure to unhealthful air.

Nationwide, levels of air toxics dropped approximately 30 percent between 1990 and 2000. For example, perchloroethylene monitored in 16 urban sites in California showed a drop of 60 percent from 1989 to 1998. Benzene, emitted from cars, trucks, oil refineries, and chemical processes, is another widely monitored toxic air pollutant. Measures taken from 95 urban monitoring sites across the country show a 47 percent drop in benzene levels from 1994 to 2000. In addition, ambient concentrations of many hazardous air pollutants remain high and continue to impose significant health risks on exposed individuals.

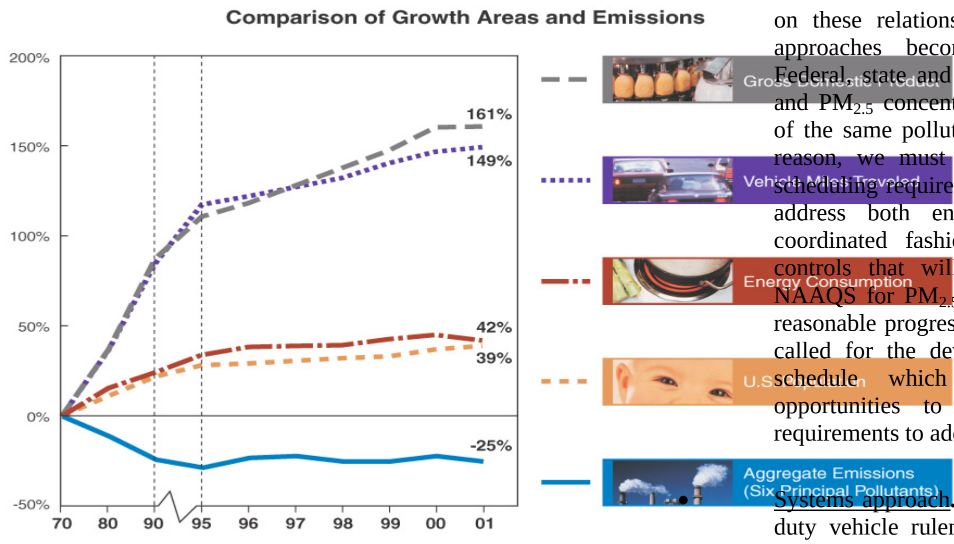
Although substantial progress has been made, it is important not to lose sight of the magnitude of the air pollution problem that still remains. Despite great progress in improving air quality, over 160 million tons of air pollution was released into the air in 2000 in the United States Approximately 121 million people lived in counties where monitored air was unhealthy because of high levels of the six principal air pollutants. Some national parks, including the Great Smoky Mountains and the Shenandoah, have high air pollution concentrations resulting from the transport of pollutants many miles from their original sources. In 2000, for the third consecutive year, rural 1-hour ozone (smog) levels were greater than the average levels observed for urban sites, but they are still lower than levels observed at suburban sites.

Means and Strategy

Strategy: EPA's overall goals for the air quality program include improving air quality and addressing highest health and environmental risks while reducing program costs, getting better results in less burdensome ways, and increasing the roles of state, Tribal, and local governments. To help implement these goals, the President has proposed the Clear Skies Act. Clear Skies was proposed in response to a growing need for an emission reduction plan that will protect the environment while providing regulatory certainty for the utility industry. Clear Skies would create a market-based program, with results guaranteed by caps instituted over a period of time that would dramatically reduce (about 70 percent) power plant emissions of SO_2, NO_x, and mercury. Clear Skies expands the successful Acid Rain program, which reduced pollution faster and at far less cost than any other Clean Air Act program. With guaranteed results, and elimination of costly regulation, litigation, inspection and enforcement actions, industry compliance is expected to be nearly 100 percent, as it has been in the Acid Rain program.

The Clean Air Act currently provides the principal framework for national, state, Tribal, and local efforts to protect and improve air quality and reduce risks. Under the Clean Air Act, EPA has a number of responsibilities:

- Ensuring continued protection of public health and the environment through regular review of National Ambient Air Quality Standards (NAAQS) for the six criteria pollutants and revision of the NAAQS, if necessary, based on the latest scientific information available.
- Ensuring that the NAAQS are met by developing and carrying out national regulatory and non-regulatory programs that reduce air pollution from vehicles, factories, and other sources, and by working in partnership with state, Tribal, and local governments on implementing their clean air programs.
- Assessing public health risks from air toxics and reducing public exposure to pollutants that cause or may cause cancer and other adverse human health effects through reduction of toxic emissions and pollution prevention.
- Reducing acid rain through a market-based approach that provides flexibility to electric utilities and other large sources of SO_2 and NO_x in how they meet emission reduction requirements.
- Protecting and enhancing visibility across large regional areas, including many of the Nation's most treasured parks and wilderness areas, by reducing pollutants such as PM, SO_2, and NO_x.
- Providing a strong scientific basis for policy and regulatory decisions and exploring emerging problem areas through a coordinated, comprehensive research program.



The air problems that now remain are some of the most difficult to solve. EPA has developed strategies to help address this difficult increment and overcome the barriers that have hindered progress towards clean air in the past. The Agency will use flexible approaches, where possible, instead of hard-and-fast formulas or specific technology requirements. Also, the Agency will work with areas that have the worst problems to develop strategies that address unique local conditions and achieve real risk reductions that matter to communities.

- Multi-pollutant strategies. The many inter-relationships among ozone, fine PM, regional haze, and air toxics problems provide opportunities for developing integrated strategies to reduce pollutant emissions. Clear Skies provides a good example of how to take advantage of these opportunities. EPA also has encouraged states, tribes, and local governments to coordinate the work they are doing to maximize the effectiveness of control strategies.
- Economic incentives. EPA has provided increased flexibility to industry through the use of economic incentives and market-based approaches. Emissions trading, averaging, and banking have become standard tools in the Agency's air programs. The acid rain program -- which is the prototype for Clear Skies -- uses allowance trading and early reduction credits to cut control costs and reduce pollution faster. The Tier II and diesel programs allow manufacturers to produce a mix of vehicles that collectively meet emission reduction targets. EPA's economic incentive programs include a variety of measures designed to increase flexibility and efficiency, while maintaining the accountability and enforceability of traditional air quality management programs.

- Integrated strategies. We will continue working with states and local agencies on air pollution problems on a regional basis. We need to build on these relationships to ensure that regional approaches become institutionalized at the Federal, state and Tribal levels. Regional haze and $PM_{2.5}$ concentrations are often the products of the same pollutants and precursors. For this reason, we must coordinate the technical and scheduling requirements for the two programs to address both environmental problems in a coordinated fashion. Because many of the controls that will be needed to achieve the NAAQS for $PM_{2.5}$ also may be needed to meet reasonable progress targets for regional haze, we called for the development of strategies on a schedule which would maximize states' opportunities to establish a single set of requirements to address both programs.

- Systems approach. The Tier II and 2007 heavy-duty vehicle rulemakings referenced above are good examples of how the Agency looks at air quality problems from a broader perspective and takes advantage of the potential synergies. As catalyst and other advanced vehicle technologies require low-sulfur fuel, the Agency is regulating fuels and vehicles as one system, to give pollution control manufacturers the incentive to develop even cleaner technologies. This results in a greater reduction in pollution -- at less cost -- than by addressing fuels and vehicles separately.

- Innovative technology. EPA increasingly incorporates incentives and performance-based approaches into regulations to spur new technologies that will help meet ambitious goals more cost-effectively -- sometimes at even less cost than EPA has predicted. The Agency also is building partnerships that help develop and deploy these new technologies. The report prepared to meet the requirements of section 812 of the Clean Air Act includes a list of the technologies that have been developed since the 1990 Amendments. The advances have been remarkable. Technologies like selective catalytic reduction (SCR) on power plants, ultra-low NO_x burners, or advanced catalysts now have entered the mainstream, at far less cost than anyone predicted.

Research

EPA's National Ambient Air Quality Standards (NAAQS) related research supports the Agency's Clean Air Goal to protect human health and the environment by meeting national clean air standards for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NO_X), lead, tropospheric ozone, and particulate matter (PM). This research provides methods, models, data, and assessment criteria on the health risks associated with exposure to these pollutants, alone and in combination, focusing on exposures, health effects, mechanisms of injury, and identifying components of particulate matter (PM) that affect public health. In addition, this research provides implementation tools to support efforts by industry, state, Tribal, and local regulators, to develop and improve State Implementation Plans (SIPs) to attain the NAAQS.

Research on air toxics investigates the root causes of the environmental and human health problems in urban areas related to these pollutants. These efforts provide the necessary health effects data, measurements, methods, models, information, assessments, and technical support to Federal, state, Tribal, and local regulators and industry to estimate human health effects and aggregate exposures to hazardous air pollutants. Research also supports atmospheric and emission modeling in order to estimate fate, ambient concentrations, and mobile source emissions of air toxics at a more refined scale. With this information, the Agency will be in a better position to determine risk and develop alternative strategies for maximizing risk reduction.

Several mechanisms are in place to ensure a high-quality research program at EPA. The Research Strategies Advisory Committee (RSAC) of EPA's Science Advisory Board (SAB), an independently chartered Federal Advisory Committee Act (FACA) committee, meets annually to conduct an in-depth review and analysis of EPA's Science and Technology account. The RSAC provides its findings to the House Science Committee and sends a written report on the findings to EPA's Administrator after every annual review. Moreover, EPA's Board of Scientific Counselors (BOSC) provides counsel to the Assistant Administrator for the Office of Research and Development (ORD) on the operation of ORD's research program. EPA's scientific and technical work products must also undergo either internal or external peer review, with major or significant products requiring external peer review. The Agency's Peer Review Handbook (2nd Edition) codifies procedures and guidance for conducting peer review.

Strategic Objectives

Attain NAAQS

- The number of people living in areas with monitored ambient ozone concentrations below the NAAQS for the 1-hour ozone standard will increase by 1% (relative to 2003) for a cumulative total of 20% (relative to 1992).

- The number of people living in areas with monitored ambient ozone concentrations below the NAAQS for the 8-hour ozone standard will increase by 3% (relative to 2003) for a cumulative total of 3% (relative to 2001).

- The number of people living in areas with monitored ambient PM concentrations below the NAAQS for the PM-10 standard will increase by 1% (relative to 2003) for a cumulative total of 11% (relative to 1992).

- The number of people living in areas with monitored ambient PM concentrations below the NAAQS for the $PM_{2.5}$ standard will increase by less than 1% (relative to 2003) for a cumulative total of less than 1% (relative to 2001).

- The number of people living in areas with monitored ambient CO, NO_2, SO_2, or Pb concentrations below the NAAQS will increase by less than 1% (relative to 2003) for a cumulative total of 63% (relative to 1992).

- Increase the number of tribes monitoring air quality for ozone and/or particulate matter from 42 to 45 and increase the percentage of tribes monitoring clean air for ozone from 64% to 67% and particulate matter from 71% to 72%.

Reduce Air Toxics Risk

- Air toxics emissions nationwide from stationary and mobile sources combined will be reduced by an additional 2% of the updated 1993 baseline of 6.0 million tons for a cumulative reduction of 37%.

Reduce Acid Rain

- Maintain or increase annual SO_2 emission reduction of approximately 5 million tons from the 1980 baseline. Keep annual emissions below level authorized by allowance holdings and make progress towards achievement of Year 2010 SO_2 emissions cap for utilities.

- 2 million tons of NO_x from coal-fired utility sources will be reduced from levels that would have been emitted without implementation of Title IV of the Clean Air Act Amendments.

Highlights

Continue progress toward NAAQS attainment: For FY 2004**,** EPA will move forward with the President's proposed Clear Skies Act, implement the National Energy Policy, continue the regular reviews of the various NAAQS, carry out programs to meet NAAQS and regional haze requirements, and continue the research, air quality monitoring, and laboratory analyses that provide the scientific and technical bases for the NAAQS program.

- $PM_{2.5}$ and 8-hour Ozone Attainment. Further emission reductions in this country are necessary to achieve the Clean Air Act $PM_{2.5}$ and 8-hour ozone National Ambient Air Quality Standards (NAAQS) recently upheld in Federal court. EPA will be moving forward with full implementation of the standards. The activities included in the President's proposed Clear Skies Act are critical elements for implementation.

- Review of NAAQS. EPA will make available to the public a comprehensive assessment of recent scientific findings on the health and environmental risks associated with PM.

Following completion of this assessment and a staff paper that evaluates the policy implications of the scientific findings, EPA will propose a decision on whether to retain or revise the PM NAAQS.

- Implementation of existing NAAQS. On the national level, EPA will work with states, tribes, and local governments on developing and implementing measures to meet clean air standards. The Agency will continue technical support for implementing the 1-hour ozone NAAQS. EPA also will support states and tribes in developing innovative, voluntary programs that will help to achieve early reductions in the transition to the 8-hour ozone standard. In addition, the Agency will develop a strategy and guidance for transition from the PM_{10} standard to a fine particulate ($PM_{2.5}$) 5standard. We will work to promote and expand the use of voluntary and other innovative approaches to provide emission reductions.

- Vehicle, engine, and fuels standards. EPA will establish and/or implement Federal standards to require cleaner motor vehicles, nonroad equipment, and fuels that are cost-effective and technically feasible. The Agency will continue implementation of the Tier II and gasoline sulfur standards. The Agency also will continue work on the 2007 heavy-duty highway engine and diesel sulfur requirements. In addition, EPA will develop a rule establishing new standards for heavy-duty nonroad diesel engines and vehicles.

- Certification and compliance. EPA will continue to monitor industry compliance with vehicle, engine, and fuels standards and to proceed with advancements in vehicle emission control technologies. The capabilities to test vehicles at EPA's National Vehicle and Fuels Emissions Laboratory (NVFEL) is expanding greatly to keep pace with the more stringent and complex new regulations for cars, heavy-duty diesel engines, and gasoline and diesel fuels that take effect in FY 2004. For example, EPA will establish a credible compliance testing program to certify that heavy-duty engine manufacturers are meeting new emission standards program requirements.

- Sensitive Populations. EPA will expand voluntary partnerships and outreach efforts to reduce emissions from diesel engines, as part of a comprehensive strategy to address the risks that pollution poses to sensitive populations, especially children. Through the Voluntary Diesel Retrofit Program, EPA will develop a public campaign on anti-idling, early switching of buses to ultra-low sulfur diesel fuel, and retrofitting or retiring selected bus models. Because diesel engines last for 30 years, EPA's new heavy-duty diesel engine standards, applicable in 2004 and 2007, will take time to impact the fleet and achieve emission reductions. Thus, voluntary partnerships and outreach efforts, as part of a comprehensive strategy, are the primary ways to realize immediate air quality benefits from the older, heavy-duty diesel engines and protect the health of today's children and other sensitive populations.

Reduce public exposure to air toxics: In FY 2004, EPA will develop strategies and rules to help states and tribes reduce emissions and exposure to hazardous air pollutants, particularly in urban areas, and reduce harmful deposition in water bodies. The Agency also will target source characterization work, especially development and improvement of emissions information that is essential for the states, tribes, and local agencies to develop strategies to meet the standards. EPA will look closely at urban areas to determine the various sources of toxics that enter the air, water, and soil, and determine the best manner to reduce the total toxics risk in these urban areas. Some specific activities and initiatives in this program for FY 2004 include:

- Air toxics monitoring. EPA will work with states to expand the air toxics monitoring network operated by state, Tribal, and local agencies. This expansion will help assess the success of EPA's comprehensive air toxics strategy, as well as the multi-pollutant strategy. Such monitoring data also will enable EPA to benchmark its models and to track ambient trends for inhalation-risk air toxics and toxic components of particulate matter such as BTX. In the long term, assessments of ambient air toxics will help achieve a reduction in the incidence of cancer attributable to exposure to hazardous air pollutants emitted by stationary sources of hazardous air pollutants of not less than 75 percent, considering control of emissions of hazardous air pollutants from all stationary sources and resulting from any measures implemented by EPA or by the states.

- Residual Risk. The 1990 Clean Air Act Amendments require EPA to set standards for 188 hazardous air pollutants on a 10-year schedule. In addition, the Amendments set detailed requirements for an air toxics program that includes a two-phased process consisting of technology-based standards for mobile and stationary sources, followed by a risk-based program approach. In FY 2004, as the final technology-based standards for stationary sources are being completed, EPA will work on a risk-based approach to protect public health from the remaining air toxics emissions. This approach includes targeting particular problems such as residual risks from already controlled sources and elevated risks in urban areas. The development of more stringent residual risk standards will reduce cancer and non-cancer related health risks in the vicinity of major industrial sources where risks from hazardous air pollutants are determined to be unacceptably high. This will also help the Agency make progress with respect to its long-term strategy goals of reducing cancer risks from stationary sources by 75% from 1990 levels and significantly reducing non-cancer related health risks.

- Mobile sources air toxics. In FY 2001, EPA issued a rule to address emissions of air toxics from mobile sources. In the rule, the Agency identified 21 mobile source air toxics and established new gasoline toxic emission performance standards. The rule established a Technical Analysis Plan to conduct research and analysis on mobile source air toxics. In FY 2004, EPA will continue gathering emissions data, conducting exposure analyses, and evaluating the need for additional controls. This information will be used to support a rulemaking in which EPA will revisit the feasibility and need for additional controls for mobile sources and their fuels. EPA also will incorporate toxics emissions data into the mobile source models.

Implement Market-based acid rain program: For FY 2004 EPA will continue to carry out the market-based acid rain program, tracking emissions, auditing and certifying monitors, recording transfers of allowances, and reconciling emissions and allowances.

- Phase II implementation. EPA will continue to implement the trading system, tracking transfers of emission allowances from the expanded number of electric utility units covered by the Phase II requirements of the Clean Air Act.

- Monitoring and assessment. EPA will manage the operation of the Clean Air Status and Trends Network (CASTNet), a dry deposition network, and provide operational support for the National Atmospheric Deposition Program (NADP), a wet deposition network. The Agency will use the monitoring results, along with other information, to help assess the effectiveness of the acid rain program in reducing health and environmental risks.

Research

The Tropospheric Ozone and Particulate Matter (PM) Research Programs will develop new information and assess existing studies to support statutorily-mandated reviews of the NAAQS and will upgrade methods and models to guide states in the development of the state implementation plans (SIPs), used to achieve the NAAQS. In FY 2004, tropospheric ozone research will evaluate and refine emissions and air quality models to evaluate SIP attainment strategies. The PM Research Program will continue work to strengthen the scientific basis for the periodic review of the PM NAAQS, including conducting epidemiological and exposure studies. The PM program will also develop tools and methods to characterize PM sources and health effects that will move the Agency toward its objective of reducing Americans' exposure to PM. Also included under this objective will be research to support review of NAAQS for lead, carbon monoxide, sulfur dioxide, and nitrogen oxide NAAQS.

Air toxics research provides information on effects, exposure, and source characterization, as well as other data to quantify existing emissions and to identify key pollutants and strategies for cost-effective risk management. In FY 2004, research will focus on completing health assessments for some of the highest priority hazardous air pollutants, and providing the science and technical support to Agency, state, Tribal and local regulators to estimate health effects and exposures to hazardous air pollutants both indoors and outdoors and to reduce risks.

New, related research efforts in Goal 8 supporting the Air Research program will include a Clear Skies initiative focusing on identifying tools to optimize mercury emissions reductions in order to increase the effectiveness of mercury reduction programs. This research, which also supports the President's multi-pollutant initiative, will provide the science needed to reduce the uncertainties limiting the Agency's ability to assess and manage health risks from mercury. It will also assist decision-makers in choosing the best technology to reduce mercury emissions to implement the final rule to regulate mercury and other air toxics emitted from power generation facilities.

External Factors

Stakeholder participation: To achieve clean air, EPA relies on the cooperation of Federal, state, Tribal, and local government agencies; industry; non-profit organizations; and individuals. Success is far from guaranteed, even with the full participation of all stakeholders. EPA has significant work to accomplish just to reach the annual targets that lead to the longer-term health and environmental outcomes and improvements that are articulated in the Clean Air goal. Meeting the Clean Air goal necessitates a strong partnership among all the stakeholders, but in particular among the states, tribes, and EPA; the Environmental Council of States; and organizations of state and local air pollution control officials. EPA will be working with various stakeholders to encourage new ways to meet the challenges of "cross regional" issues as well as to integrate programs to address airborne pollutants more holistically.

Environmental factors: In developing clean air strategies, states, tribes, and local governments assume normal meteorological patterns. As EPA develops standards and programs to achieve the Clean Air goal, it has to consider weather as a variable in the equation for implementing standards and meeting program goals. For example, even if an area is implementing a number of air pollution control programs under normal meteorological patterns, a hot humid summer may cause an area to exceed standards for days at a time, thereby exposing the public to unhealthy air.

Litigation: In July 1997, EPA published more protective NAAQS for ozone and PM. The standards were litigated. After extensive litigation in the Supreme Court and the Court of Appeals for the District of Columbia Circuit, both standards are still in effect. The $PM_{2.5}$ standard adopted in 1997 was completely affirmed by the courts and is not subject to further litigation. However, the revised PM_{10} standard was vacated, resulting in reinstatement of the prior PM_{10} standard. The 1997 ozone standard was also largely upheld by the D.C. Circuit's and the Supreme Court's decisions although the Supreme Court remanded ozone implementation issues to EPA. In response to the Supreme Court's decision, the Agency is conducting a rulemaking on the issue of how to implement the new 8-hour ozone standard in light of the Clean Air Act's provisions on the old 1-hour standard. This rulemaking does not affect the validity of the 8-hour standard. The litigation did not affect standards that were in place prior to July 1997.

Resource Summary
(Dollars in thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Clean Air	**$602,190.0**	**$597,977.2**	**$617,415.1**	**$19,437.9**
Attain NAAQS	$466,814.5	$458,856.2	$468,437.2	$9,581.0
Reduce Air Toxics Risk	$113,811.7	$118,023.2	$127,747.1	$9,723.9
Reduce Acid Rain.	$21,563.8	$21,097.8	$21,230.8	$133.0
Total Workyears	1,813.8	1,820.0	1,823.3	3.3

Objective: Attain NAAQS

Reduce the risk to human health and the environment by protecting and improving air quality so that air throughout the country meets national clean air standards by 2005 for carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead; by 2012 for ozone; and by 2018 for particulate matter (PM). To accomplish this in Indian country, the tribes and EPA will, by 2005, have developed the infrastructure and skills to assess, understand, and control air quality and protect Native Americans and others from unacceptable risks to their health, environment, and cultural uses of natural resources.

Resource Summary
(Dollars in Thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Attain NAAQS	**$466,814.5**	**$458,856.2**	**$468,437.2**	**$9,581.0**
Environmental Program & Management	$123,418.6	$118,516.3	$126,326.9	$7,810.6
Hazardous Substance Superfund	$0.0	$21.5	$2.1	($19.4)
Science & Technology	$140,808.0	$146,851.9	$148,626.3	$1,774.4
State and Tribal Assistance Grants	$202,587.9	$193,466.5	$193,481.9	$15.4
Total Workyears	1,347.0	1,357.1	1,357.5	0.4

Key Program
(Dollars in Thousands)

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Air, State, Local and Tribal Assistance Grants: Other Air Grants	$199,966.5	$193,466.5	$193,481.9	$15.4
Carbon Monoxide	$4,258.4	$4,025.1	$3,887.0	($138.1)
Congressionally Mandated Projects	$14,492.5	$0.0	$0.0	$0.0
Facilities Infrastructure and Operations	$18,870.3	$19,198.1	$20,024.6	$826.5
Homeland Security-Critical Infrastructure Protection	$0.0	$0.0	$1,102.9	$1,102.9
Homeland Security-Preparedness, Response and Recovery	$820.5	$0.0	$910.2	$910.2
Homeland Security-Protect EPA Personnel/Infrastructure	$0.0	$0.0	$600.0	$600.0
Lead	$342.2	$339.6	$349.5	$9.9

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Management Services and Stewardship	$4,503.9	$4,568.7	$5,305.1	$736.4
Nitrogen Oxides	$1,325.5	$1,399.0	$1,436.9	$37.9
Ozone	$68,455.1	$77,498.8	$69,497.9	($8,000.9)
Particulate Matter	$52,302.7	$62,624.3	$74,787.8	$12,163.5
Particulate Matter Research	$65,468.2	$66,662.0	$65,709.4	($952.6)
Planning and Resource Management	$0.0	$0.0	$929.3	$929.3
Regional Haze	$2,535.9	$2,408.1	$2,453.8	$45.7
Regional Management	$349.5	$310.1	$650.2	$340.1
Sulfur Dioxide	$12,318.5	$13,624.7	$14,102.2	$477.5
Tropospheric Ozone Research	$6,514.8	$6,758.1	$7,024.0	$265.9

Annual Performance Goals and Measures

Reduce Exposure to Unhealthy Ozone Levels - 1 Hour

In 2004 The number of people living in areas with monitored ambient ozone concentrations below the NAAQS for the 1-hour ozone standard will increase by 1% (relative to 2003) for a cumulative total of 20% (relative to 1992).

In 2003 Maintain healthy air quality for 42 million people living in monitored areas attaining the ozone standard; certify that 7 areas of the remaining 54 nonattainment areas have attained the 1-hour NAAQS for ozone thus increasing the number of people living in areas with healthy air by 5.1 million.

In 2002 Maintained healthy air quality for 41.7 million people living in monitored areas attaining the ozone standard; and certified 1 area of the remaining 55 nonattainment areas attained the 1-hour NAAQS for ozone, thus increasing the number of people living in areas with healthy air by 326,000.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	
Cumulative Percent Increase in the Number of People who Live in Areas with Ambient 1-hour Ozone Concentrations Below the Level of the NAAQS as Compared to 1992		19	20	Percent
Cumulative Percent Increase in the Number of Areas with Ambient 1-hour Ozone Concentrations Below the Level of the NAAQS as Compared to 1992		31	33	Percent
Total Number of People who Live in Areas Designated to Attainment of the Clean Air Standards for Ozone	42,026,000	47,105,000	n/a	People
Areas Designated to Attainment for the Ozone Standard	1	7	0	Areas
Additional People Living in Newly Designated Areas with Demonstrated Attainment of the Ozone Standard	326,000	5,079,000	n/a	People
VOCs Reduced from Mobile Sources	1,755,000	1,852,000	2,040,000	Tons
NOx Reduced from Mobile Sources	1,319,000	1,449,000	1,653,000	Tons

Baseline: At the time that the Clean Air Act Amendments of 1990 were enacted (for the period 1990 - 1992), 52 areas with a population of 118 million people had ambient ozone concentrations that were greater than the level of the NAAQS. For the period 1999 - 2001, 16 of these areas (31%) with a population of 24 million people (19%) had ambient ozone concentrations were below the level of the NAAQS. In 1990, 101 areas were designated in nonattainment for the 1-hour ozone standard. Through 2002, 47 areas have been redesignated to attainment and 54 areas remain in nonattainment. The 1995 baseline for VOCs reduced from mobile sources is 8,134,000 tons and 11,998,000 tons for NOx, both ozone precursors. Notes: Areas means nonattainment areas for comparisons with the 1-hour NAAQS. Comparisons of ambient air quality concentrations with the level of the NAAQS are based on a time period and statistic consistent with the NAAQS. For ozone, this means a 3 year time frame. Population estimates based on 2000 census.

Reduce Exposure to Unhealthy PM Levels - PM-10

In 2004 The number of people living in areas with monitored ambient PM concentrations below the NAAQS for the PM-10 standard will increase by 1% (relative to 2003) for a cumulative total of 11% (relative to 1992).

In 2003 Maintain healthy air quality for 6.1 million people living in monitored areas attaining the PM standards; increase by 81 thousand the number of people living in areas with healthy air quality that have newly attained the standard.

In 2002 Maintained healthy air quality for 3.4 million people living in monitored areas attaining the PM standards; and increased by 2.7 million the number of people living in areas with healthy air quality that have newly attained the standard.

Performance Measures:	FY 2003 Pres. Bud.	FY 2004 Request		
Cumulative Percent Increase in the Number of People who Live in Areas with Ambient PM-10 Concentrations Below the Level of the NAAQS as Compared to 1992	10	11		Percent
Cumulative Percent Increase in the Number of Areas with Ambient PM-10 Concentrations Below the Level of the NAAQS as Compared to 1992	45	46		Percent
Total Number of People who Live in Areas Designated in Attainment with Clean Air Standards for PM	6,212,000			People
Areas Designated to Attainment for the PM-10 Standard	8	8		Areas
Additional People Living in Newly Designated Areas with	81,000			People

Performance Measures:	FY 2003 Pres. Bud.	FY 2004 Request		
Demonstrated Attainment of the PM Standard				
PM-10 Reduced from Mobile Sources	25,000	18,000		Tons
PM-2.5 Reduced from Mobile Sources	18,000	13,500		Tons

Baseline: At the time that the Clean Air Act Amendments of 1990 were enacted (for the period 1990-1992), 58 areas (nonattainment areas for comparisons with the PM-10 NAAQS.) with a population of 38 million people had ambient PM-10 concentrations that were greater than the level of the NAAQS. For the period 1999-2001, 26 of these areas (45%) with a population of 4 million (10%) had ambient PM-10 concentrations below the level of the NAAQS. (Population estimates based on 2000 census.) Comparisons of ambient air quality concentrations with the level of the NAAQS are based on a time period and statistic consistent with the NAAQS. For PM-10, this means a 3 year time frame. As a result of the Clean Air Act Amendments of 1990, 84 areas were designated nonattainment for the PM-10 standard. Since that time, EPA has split Pocatella into 2 areas thereby revising the baseline to 85. Through 2002, 22 areas have been redesignated to attainment. The 1995 baseline for PM-10 reduced from mobile sources is 880,000 tons.

Reduce Exposure to Unhealthy CO, SO2, NO2, Lead

In 2004 The number of people living in areas with monitored ambient CO, NO2, SO2, or Pb concentrations below the NAAQS will increase by less than 1% (relative to 2003) for a cumulative total of 63% (relative to 1992).

In 2003 Maintain healthy air quality for 53 million people living in monitored areas attaining the CO, SO2, NO2, and Lead standards; increase by 1.1 million the number of people living in areas with healthy air quality that have newly attained the standard.

In 2002 Maintained healthy air quality for 36.7 million people living in monitored areas attaining the CO, SO2, NO2, and Lead standards; and increased by 16.5 million, the number of people living in areas with healthy air quality that have newly attained the standard.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request		
Cumulative Percent Increase in the Number of People who Live in Areas with Ambient CO, SO2, NO2, or Pb Concentrations Below the Level of the NAAQS as Compared to 1992		63	63		Percent
Cumulative Percent Increase in the Number of Areas with Ambient CO, SO2, NO2, or Pb Concentrations Below the Level of the NAAQS as Compared to 1992		74	77		Percent
Total Number of People Living in Areas Designated in Attainment with Clean Air Standards for CO, SO2, NO2, and Pb	53,190,000	54,181,000	n/a		People
Areas Designated to Attainment for the CO, SO2, NO2, and Pb Standards	12	11	13		Areas
Additional People Living in Newly Designated Areas with Demonstrated Attainment of the CO, SO2, NO2, and Pb Standards	16,490,000	1,118,800	n/a		People
CO Reduced from Mobile Sources	11,002,000	11,333,000	12,636,000		Tons
Total Number of People Living in Areas with Demonstrated Attainment of the NO2 Standard	14,944,000	14,944,000	n/a		People

Baseline: At the time the Clean Air Act Amendments of 1990 were enacted (for the period 1991-1992), 27 areas (counties comprising nonattainment areas for the comparisons with the NAAQS) with a population of 48 million people had ambient CO, SO2, NO2, or Pb concentrations (comparisons of ambient air quality concentrations with the level of the NAAQS are based on a time period and statistic consistent with each individual NAAQS) that were greater than the level of the NAAQS. For the period 2000-2001 (For some of the pollutants included in this measure, the number of years used to evaluate the ambient concentrations relative to the NAAQS may be less than the referenced time period: e.g. NO2 is evaluated over a single year.), 20 of these areas (74%) with a population of 30 million (63%) had ambient CO, SO2, NO2, or Pb concentrations less than the level of the NAAQS. (Population estimates based on 2000 census.) The projected improvement in 2004 is estimated for a single area. Therefore, the increase by definition must occur in a single year interval. In addition, the population living in these areas of improved air quality is small relative to that for the remaining areas. Therefore the projected improvement in population is greater than zero but less than 1. For CO, SO2, NO2, and Pb, 107 areas were classified as nonattainment or were unclassified in 1990. Through 2002, 76 of those areas have been redesignated to attainment. The 1995 baseline for mobile source emissions for CO was 70,947,000 tons.

Reduce Exposure to Unhealthy Ozone Levels - 8 Hour

In 2004 The number of people living in areas with monitored ambient ozone concentrations below the NAAQS for the 8-hour ozone standard will increase by 3% (relative to 2003) for a cumulative total of 3% (relative to 2001).

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	
Cumulative Percent Increase in the Number of People who Live in Areas with Ambient 8-hour Concentrations Below the Level of the NAAQS as Compared to 2001			3	Percent
Cumulative Percent Increase in the Number of Areas with Ambient 8-hour Ozone Concentrations Below the Level of the NAAQS as Compared to 2001			7	Percent

Baseline: For the period 1999-2001, 302 areas (counties) with a population of 115 million people had ambient 8-hour ozone concentrations above the level of the NAAQS. (Population estimates based on 2000 census.) Comparisons of ambient air quality concentrations with the level of the NAAQS are based on a time period and statistic consistent with the NAAQS. For ozone, this means a 3 year time frame.

Reduce Exposure to Unhealthy PM Levels - PM- 2.5

In 2004 The number of people living in areas with monitored ambient PM concentrations below the NAAQS for the PM-2.5 standard will increase by less than 1% (relative to 2003) for a cumulative total of less than 1% (relative to 2001).

Performance Measures:	FY 2003 Pres. Bud.	FY 2004 Request	
Cumulative Percent Increase in the Number of People who Live in Areas with Ambient PM-2.5 Concentrations Below the Level of the NAAQS as Compared to 2001		<1	Percent
Percent Increase in the Number of Areas with Ambient PM-2.5 Concentrations Below the Level of the NAAQS as Compared to 2001		1	Percent

Baseline: For the period 1999-2001, 132 areas (counties) with a population of 66 million people had ambient PM-2.5 concentrations that were greater than the level of the NAAQS. (Population estimates based on 2000 census.) Comparisons of ambient air quality concentrations with the level of the NAAQS are based on a time period and statistic consistent with the NAAQS. For PM-2.5, this means a 3-year time frame. The 1995 baseline for PM-2.5 reduced from mobile sources is 659,000 tons.

Increase Tribal Air Capacity

In 2004 Increase the number of tribes monitoring air quality for ozone and/or particulate matter from 42 to 45 and increase the percentage of tribes monitoring clean air for ozone from 64% to 67% and particulate matter from 71% to 72%.

In 2003 Increase the number of tribes monitoring air quality for ozone and/or particulate matter from 37 to 42 and increase the percentage of tribes monitoring clean air for ozone from 62% to 64% and particulate matter from 68% to 71%.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	
Percent of Tribes with Tribal Lands Monitoring for Ozone and/or Particulate Matter		12	13	Percent
Percent of Monitoring Tribes Monitoring Clean Air for Ozone		64	67	Percent
Percent of Monitoring Tribes Monitoring Clean Air for Particulate Matter		71	72	Percent
Number of Tribes Implementing Air Programs		25	30	Tribes

Baseline: There are 576 Federally recognized tribes with 347 tribes having tribal lands (Alaska Native Villages (tribes) number 229 entities, but only one 'reservation'). Through September 2002, there are 21 tribes implementing air programs; 37 tribes conducting monitoring for ozone and/or particulate matter; 8 tribes are currently monitoring clean air for ozone (of 13 total) and 25 tribes are currently monitoring clean air for particulate matter (of 37 total); and 15 tribes submitting quality assured data.

Research

PM Effects Research

In 2004 Provide reports to OAR and the scientific community that examine the health effects of high levels of air pollutants, especially particulate matter, in potentially susceptible populations so that PM standards protect human health to the maximum extent possible.

In 2002 EPA provided data on the health effects and exposure to particulate matter (PM) and provided methods for assessing the exposure and toxicity of PM in healthy and potentially susceptible subpopulations to strengthen the scientific basis for reassessment of the NAAQS for PM.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	
Report on the effects of concentrated ambient PM on humans and animals believed most susceptible to adverse effects (e.g., elderly, people with lung disease, or animal models of such diseases).	1			report
Report on animal and clinical toxicology studies using Utah Valley particulate matter (UVPM) to describe biological mechanisms that may underlie the reported epidemiological effects of UVPM.	1			report
Report on the chronic respiratory health effects in children of intra-urban gradients of particulate matter and co-pollutants in El Paso, TX.			1	report
Report on epidemiologic studies examining acute cardiac and respiratory effects in the elderly and children exposed to particulate matter (PM) and co-pollutants.			1	report

Baseline: There is currently considerable concern that increased levels of particulate matter (PM) may disproportionately affect certain susceptible groups, especially when exposures are long-term. One such group is children, particularly those with pre-existing asthma and related cardiopulmonary diseases. Children living in areas of high pollution such as on the U.S.-Mexico border are particularly at risk due to economic factors as well as exposure. The elderly with chronic lung disease comprise another susceptible group who may be more acutely affected. Which components of PM are responsible for health effects in either of these groups remains unclear, as does how exposure data from monitoring sites relates to their personal situations. As noted by the National Research Council, the issue of susceptibility and chronic health outcomes is of utmost importance. Completion of this APG in FY 2004 will provide critical information to enhance risk estimates needed for promulgating the PM NAAQS and will provide information to the Office of Air so that it may focus its Air Quality Index on those who are at greatest risk.

Verification and Validation of Performance Measures

FY 2004 Performance Measures:

- **Percent increase in the number of people who live in areas with ambient criteria pollutant concentrations that meet or are below the level of the NAAQS.**
- **Percent increase in the number of areas with ambient criteria pollutant concentrations that meet or are below the level of the NAAQS.**
- **Percent of areas with improved ambient criteria pollutant concentrations for the NAAQS.**
- **Percent increase in the number of people living in areas with improved ambient criteria pollutant concentrations for the NAAQS.**
- **Areas designated to attainment for the NAAQS.**

Performance Databases: AQS —The Air Quality Subsystem (AQS) stores ambient air quality data used to evaluate an area's air quality levels relative to the NAAQS.

FREDS—The Findings and Required Elements Data System is used to track progress of states and Regions in reviewing and approving the required data elements of the State Implementation Plans (SIP). SIPs are clean air plans and define what actions a state will take to improve the air quality in areas that do not meet national ambient air quality standards

Data Sources:
AQS: State & local agency data from State and Local Air Monitoring Stations (SLAMS). Population: Data from Census-Bureau/Department of Commerce
FREDS: Data are provided by EPA's Regional offices.

Methods, Assumptions, and Suitability: Air quality levels are evaluated relative to the level of the appropriate NAAQS. Next the populations in areas with air quality concentrations above the level of the NAAQS are aggregated. This analysis assumes that the populations of the areas are held constant at 2000 Census levels. Data comparisons over several years allow assessment of the air program's success.

QA/QC Procedures: AQS: The QA/QC of the national air monitoring program has several major components: the Data Quality Objective (DQO) process, reference and equivalent methods program, EPA's National Performance Audit Program (NPAP), system audits, and network reviews (Available on the Internet: www.epa.gov/ttn/amtic/npaplist.html) To ensure quality data, the SLAMS are required to meet the following: 1) each site must meet network design and site criteria; 2) each site must provide adequate QA assessment, control, and corrective action functions according to minimum program requirements; 3) all sampling methods and equipment must meet EPA reference or equivalent requirements; 4) acceptable data validation and record keeping procedures must be followed; and 5) data from SLAMS must be summarized and reported annually to EPA. Finally, there are system audits that regularly review the overall air quality data collection activity for any needed changes or corrections. Further information available on the Internet: http://www.epa.gov/cludygxb/programs/namslam.html and through United States EPA's Quality Assurance Handbook (EPA_600/4_77_022a, Section2.0.11)

Populations: No additional QA/QC beyond that done by the Census Bureau/Department of Commerce.

FREDS: No formal QA/QC procedures.

Data Quality Review:
AQS: No external audits have been done in the last 3 years. However, internal audits are regularly conducted.

Populations: No additional QA/QC beyond that done by the Census Bureau/Department of Commerce.

FREDS: None.

Data Limitations:
AQS: None known.
Populations: No additional QA/QC beyond that done by the Census Bureau/Department of Commerce.
FREDS: None known.

Error Estimate: At this time it is not possible to develop an error estimate. Uncertainty in projections (from modeling) and near term variations in air quality (due to meteorological conditions for example) exist.

New/Improved Data or Systems:
AQS: EPA recently completed the process of reengineering the AQS to make it a more user friendly, Windows-based system. As a result, air quality data will be more easily accessible via the Internet. AQS has been enhanced to include data standards (*e.g.*, latitude/longitude, chemical nomenclature) developed under the Agency's Reinventing Environmental Information (REI) Initiative.

Population: None

FREDS: None

References: For additional information about criteria pollutant data, non-attainment areas, and other related information, see: http://www.epa.gov/airtrends/ .

FY 2004 Performance Measures:

- **Estimated Mobile Source VOC Emissions**
- **Estimated Mobile Source NOx Emissions**
- **Estimated Mobile Source PM 10 Emissions**
- **Estimated Mobile Source PM 2.5 Emissions**
- **Estimated Mobile Source CO Emissions**

Performance Database: National Emissions Inventory Database. See: http://www.epa.gov/ttn/chief/trends/

Data Source: Mobile source emissions inventories.
Estimates for on-road, off-road mobile source emissions are built from inventories fed into the relevant models which in turn provide input to the National Emissions Inventory Database.

The MOBILE vehicle emission factor model is a software tool for predicting gram per mile emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, carbon dioxide, particulate matter, and toxics from cars, trucks, and motorcycles under various conditions.

The NONROAD emission inventory model is a software tool for predicting emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, particulate matter, and sulfur dioxides from small and large off road vehicles, equipment, and engines.

Certain mobile source information is updated annually. Inputs are updated annually only if there is a rationale and readily available source of annual data. Generally, Vehicle Miles Traveled (VMT), the mix of VMT by type of vehicle (FHWA types), temperature, gasoline properties, and the designs of Inspection/Maintenance (I/M) programs are updated each year. The age mix of highway vehicles is updated using state registration data thereby capturing the effect of fleet turnover (assuming emission factors for older and newer vehicles are correct.) Emission factors for all mobile sources and activity estimates for non-road sources are changed only when the Office of Transportation and Air Quality requests that this be done and is able to provide the new information in a timely manner. This information includes data from the MOBILE6 model and the latest version of the nonroad model. Available respectively on the Internet

Methods, Assumptions, and Suitability: EPA issues emissions standards that set limits on how much pollution can be emitted from a given mobile source. Mobile sources include vehicles that operate on roads and highways ("on road" or "highway" vehicles), as well as nonroad vehicles, engines, and equipment. Examples of mobile sources are cars, trucks, buses, earthmoving equipment, lawn and garden power tools, ships, railroad locomotives, and airplanes. Vehicle and equipment manufacturers have responded to many mobile source emission standards by redesigning vehicles and engines to reduce pollution.

EPA uses models to estimate mobile source emissions, for both past and future years. The estimates are used in a variety of different settings. The estimates are used for rulemaking.

The most complete and systematic process for making and recording such estimates is the “Trends” inventory process executed each year by the Office of Air Quality Planning and Standards’ (OAQPS) Emissions, Monitoring, and Analysis Division (EMD). The Assessment and Modeling Division is the coordinator within the Office of Transportation and Air Quality for providing EMD information and methods for making the mobile source estimates. In addition, EMD’s contractors obtain necessary information directly from other sources; for example, weather data and the Federal Highway Administration’s (FHWA) Vehicle Miles Traveled (VMT) estimates by state. EMD creates and publishes the emission inventory estimate for the most recent historical year, detailed down to the county level and with over 30 line items representing mobile sources. Usually, EMD creates estimates of emissions for future years. When the method for estimating emissions changes significantly, EMD usually revises its older estimates of emissions in years prior to the most recent year, to avoid a sudden discontinuity in the apparent emissions trend. EMD publishes the national emission estimates in hardcopy; county-level estimates are available electronically. Additional information about transportation and air quality related to estimating, testing for, and measuring emissions, as well as research being conducted on technologies for reducing emissions is available at http://www.epa.gov/otaq/research.htm

QA/QC Procedures: The emissions inventories are continuously improved.

Data Quality Review: The emissions inventories are reviewed by both internal and external parties.

Data Limitations: The limitations of the inventory estimates for mobile sources come from limitations in the modeled emission factors (based on emission factor testing and models predicting overall fleet emission factors in g/mile) and also in the estimated vehicle miles traveled for each vehicle class (derived from Department of Transportation data).http://www.epa.gov/otaq/m6.htm. For nonroad emissions, the estimates come from a model using equipment populations, emission factors per hour or unit of work, and an estimate of usage. This nonroad emissions model accounts for over 200 types of nonroad equipment. Any limitations in the input data will carry over into limitations in the emission inventory estimates. Available on the Internet: http://www.epa.gov/otaq/m6.htm

It is important to have the current and future year emission reduction estimates generated using consistent methods. The EPA Emission Trends report dated December 1997 has mobile source emission inventories for the 1995 base year as well as estimates for years 2000, 2002, 2005, and 2007. The base year emissions in 1995 for mobile sources are 8,134,000 tons VOC; 70,947 tons CO; 11,998 tons NOx; 878,000 tons PM-10; and 659,000 tons PM. These data were used to predict the emission reductions in year 2000 and later.

Error Estimate: Additional information about data integrity is available on the Internet: http://www.epa.gov/otaq/m6.htm.

New/Improved Data or Systems: To keep pace with new analysis needs, new modeling approaches, and new data, EPA is currently working on a new modeling system termed the Multi-scale Motor Vehicles and Equipment Emission System (MOVES). This new system will estimate emissions for on road and off road sources, cover a broad range of pollutants, and allow multiple scale analysis, from fine scale analysis to national inventory estimation. When fully implemented, MOVES will serve as the replacement for MOBILE6 and NONROAD. The new system will not necessarily be a single piece of software, but instead will encompass the necessary tools, algorithms, underlying data and guidance necessary for use in all official analyses associated with regulatory development, compliance with statutory requirements, and national/regional inventory projections. Additional information is available on the Internet: http://www.epa.gov/otaq/ngm.htm

References: For additional information about mobile source programs see: http://www.epa.gov/otaq/.

FY 2004 Performance Measures

- **Percent of Tribes with Tribal Lands Monitoring for Ozone and/or Particulate Matter**

- **Percent of Monitoring Tribes Monitoring Clean Air for Ozone**

- **Percent of Monitoring Tribes Monitoring Clean Air for Particulate Matter**

Performance Database: The Tribal Monitoring database is maintained by OAR Headquarters in Washington D.C. The database details the number and types of monitors operated by tribes in each EPA Region, with Regional and National totals by type of monitor. The database contains all available historical and current information on tribal monitors. The data are more complete after 1996.

For those tribes with ambient air quality data, which have been quality assured following published procedures (see reference below), the data are reported to the Air Quality Subsystem (AQS) and used to evaluate a tribe's or an area's air quality levels relative to the National Ambient Air Quality Standards (NAAQS). http://www.epa.gov/ttn/airs/airsaqs/manuals/ manuals.htm Because tribes are in the early stages of building monitoring capacity, only a subset of tribes report data to AQS. (For additional information about AQS, see the Verification and Validation Section for the NAAQS.)

Data Source: Data are compiled by EPA's Regional Offices and reported to Headquarters.

Methods, Assumption, and Suitability: N/A

QA/QC procedures: EPA's Regional Offices check performance data (e.g., percent of tribes) for accuracy.
Data Quality Review: N/A

Data Limitations: Data limitations are subject to the accuracy and timeliness of reported data. The performance data (e.g., percent of tribes) do not require mathematical interpretation or analysis and are not subject to bias or uncertainty.

New/Improved Performance Data or Systems: N/A

Error Estimate: N/A

References: The data are presented to the public at appropriate meetings, and are available upon request to any member of the public.
http://www.epa.gov/ttn/airs/airsaqs/manuals/manuals.htm

FY 2004 Performance Measure: Number of Tribes Implementing Air Programs

Performance Database: Output Measure. The Tribal Air Program database is maintained by OAR Headquarters in Washington D.C. The database details the air programs being implemented by tribes in each EPA Region, with Regional and National totals. The database contains all available historical and current information on tribal monitors. The data are more complete after 1996.

Data Source: Data are compiled by EPA's Regional Offices and reported to Headquarters.

Methods, Assumption, and Suitability: N/A

QA/QC procedures: N/A

Data Quality Review: N/A

Data Limitations: N/A

New/Improved Performance Data or Systems: N/A

Error Estimate: N/A

References: The data are presented to the public at appropriate meetings, and are available upon request to any member of the public.

FY 2004 Performance Measure: Report on the chronic respiratory health effects in children of intra-urban gradients of particulate matter and co-pollutants in EL Paso, TX.

Performance Database: Program output; no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: Report

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

FY 2004 Performance Measure: Report on epidemiological studies examining acute cardiac and respiratory effects in the elderly and children exposed to particulate matter (PM) and co-pollutants.

Performance Database: Program output, no internal tracking system

Data Source: N/A

Methods, Assumptions and Suitability: N/A

QA/QC Procedures: N/A

Data Quality Reviews: Report

Data Limitations: N/A

Error Estimate: N/A

New/Improved Data or Systems: N/A

References: N/A

Research

Other than Criteria Document preparation, which is EPA's responsibility alone, the Agency's core tropospheric ozone research program is coordinated with other agencies' research efforts, including those of the Departments of Energy and Commerce, and the National Science Foundation. All exposure and risk management research in this area is coordinated through the efforts of the North American Consortium for Atmospheric Research in Support of Air Quality Management (NARSTO), a public/private partnership whose membership spans governments, utilities, industry, and academia throughout Mexico, the United States, and Canada.

The National Academy of Sciences PM research plan serves as the principal guideline for EPA's PM research program. EPA coordinates with other Federal agencies (e.g., the National Institutes of Health and the Department of Energy) to review ongoing PM research activities and, where appropriate, refocuses activities so as to be consistent with the NAS plan. The EPA has chosen to take a broad-based approach to PM research planning and program development that includes participation by the private sector.

The PM science planning community has pointed to the need to conduct its health effects, exposure, and monitoring research in close coordination, so that PM toxicological, epidemiological, and exposure research are done in combination. EPA will continue to focus on such coordination and pursue a number of avenues to achieve public/private coordination and cooperation, including: (1) playing a lead role in coordinating all Federal agency research on PM health, exposure, and atmospheric processes under the Air Quality Research Subcommittee of the President's Committee on Environment and Natural Resources (CENR/AQRS); (2) creating an open inventory of all public and private ongoing PM research; and (3) completing a Research Strategy for PM which will benefit all organizations engaged in PM-related research.

One key opportunity for coordinating research supporting state efforts to implement the PM NAAQS is through the expansion of NARSTO, which has broadened its mission to include PM-related efforts. Complementary Federal/private coordination of effects-related research is under development, including that of the CENR/AQRS, and is being closely coordinated with the NARSTO expansion.

Statutory Authorities

Clean Air Act (42 U.S.C. 7401-7671q)

Motor Vehicle Information and Cost Savings Act and Alternative Motor Fuels Act of 1988 (AFMA)

National Highway System Designation Act

Research

Clean Air Act (42 U.S.C. 7401-7671q)

Objective 2: Reduce Air Toxics Risk

By 2020, eliminate unacceptable risks of cancer and other significant health problems from air toxic emissions for at least 95 percent of the population, with particular attention to children and other sensitive subpopulations, and substantially reduce or eliminate adverse effects on our natural environment. By 2010, the tribes and EPA will have the information and tools to characterize and assess trends in air toxics in Indian country.

Resource Summary
(Dollars in Thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Reduce Air Toxics Risk	**$113,811.7**	**$118,023.2**	**$127,747.1**	**$9,723.9**
Environmental Program & Management	$56,147.2	$56,913.9	$59,095.2	$2,181.3
Science & Technology	$29,082.8	$23,818.9	$24,361.5	$542.6
State and Tribal Assistance Grants	$28,581.7	$37,290.4	$44,290.4	$7,000.0
Total Workyears	375.9	371.4	378.5	7.1

Key Program
(Dollars in Thousands)

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Air Toxics Research	$18,923.4	$19,883.7	$20,342.4	$458.7
Air, State, Local and Tribal Assistance Grants: Other Air Grants	$30,790.4	$37,290.4	$44,290.4	$7,000.0
Congressionally Mandated Projects	$4,095.0	$0.0	$0.0	$0.0
Facilities Infrastructure and Operations	$5,430.0	$5,249.3	$5,911.0	$661.7
Hazardous Air Pollutants	$52,225.3	$52,622.4	$54,235.7	$1,613.3
Homeland Security-Preparedness, Response and Recovery	$353.5	$0.0	$0.0	$0.0
Legal Services	$1,552.6	$1,713.0	$1,780.8	$67.8
Management Services and Stewardship	$1,288.7	$1,264.4	$1,147.3	($117.1)
Regional Management	$0.0	$0.0	$39.5	$39.5

Annual Performance Goals and Measures

Reduce Air Toxic Emissions

In 2004 Air toxics emissions nationwide from stationary and mobile sources combined will be reduced by an additional 2% of the updated 1993 baseline of 6.0 million tons for a cumulative reduction of 37%.

In 2003 Air toxics emissions nationwide from stationary and mobile sources combined will be reduced by an additional 1% of the updated 1993 baseline of 6.0 million tons for a cumulative reduction 35%.

In 2002 End-of-year FY 2002 data will be available in late 2004 to verify that air toxics emissions nationwide from stationary and mobile sources combined will be reduced by 1.5% from 2001 for a cumulative reduction of 33.5% from the 1993 baseline of 6.0 million tons per year.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	
Combined Stationary and Mobile Source Reductions in Air Toxics Emissions	Data Lag	1	2	Percent
Mobile Source Air Toxics Emissions Reduced		.68	.71	Million Tons
Stationary Source Air Toxics Emissions Reduced		1.57	1.59	Million Tons
Major Sources, Area and All Other Air Toxics Emissions Reduced		+.12	+.13	Million Tons

Baseline: In 1993, the last year before the MACT standards and mobile source regulations developed under the Clean Air Act began to be implemented, stationary and mobile sources are now estimated to have emitted 6.0 million tons of air toxics. (EPA's prior estimate was 4.3 million tons and was updated with improved inventory data.) Air toxics emission data are revised every three years to generate inventories for the National Toxics Inventory (NTI). In the intervening years between the update of the NTI, the model EMS-HAP (Emissions Modeling System for Hazardous Air Pollutants) is used to estimate and project annual emissions of air toxics. EMS-HAP projects emissions, by adjusting point, area and mobile emission data to account for growth and emission reductions resulting from emission reduction scenarios such as the implementation of the Maximum Achievable Control Technology (MACT) standards. The FY 2003 target does not have growth factored in. With growth, the target for 2003 is a 1% reduction from 2002 levels for a cumulative reduction of 35%.

Verification and Validation of Performance Measures

FY 2004 Performance Measure:

- **Combined Stationary and Mobile Source Reductions in Air Toxics Emissions**
- **Mobile Source Air Toxics Emissions Reduced**
- **Stationary Source Air Toxics Emissions Reduced**
- **All Other Air Toxics Emissions Reduced**

Performance Database: National Toxics Inventory (NTI)

Data Source: The NTI includes emissions from large industrial or point sources, smaller stationary area sources, and mobile sources. The baseline NTI (for base years 1990 - 1993) includes emissions information for 188 hazardous air pollutants from more than 900 stationary sources and from mobile sources. It is based on data collected during the development of Maximum Achievable Control Technology (MACT) standards, state and local data, Toxics Release Inventory (TRI) data, and emissions estimates using accepted emission inventory methodologies. The baseline NTI contains county level emissions data and cannot be used for modeling because it does not contain facility specific data.

The 1996 and the 1999 NTI contain major industrial, area, and mobile source estimates that are used as input to National Air Toxics Assessment (NATA) modeling. The 1996 and 1999 NTI contain estimates of facility-specific HAP emissions and their source specific parameters necessary for modeling such as location and facility characteristics (stack height, exit velocity, temperature, etc.)

The primary source of data in the 1996 and 1999 NTI is state and local air pollution control agencies and tribes. These data vary in completeness, format, and quality. EPA evaluates these data and supplements them with data gathered while developing MACT and residual risk standards, industry data, and TRI data. To produce a complete model-ready national inventory, EPA estimates emissions for approximately 30 area source categories such as wildfires and residential heating sources not included in the state, local and Tribal data. Mobile source data are developed using data provided by state and local agencies and tribes and the most current onroad and nonroad models developed by EPA's Office of Transportation and Air Quality. The draft 1996 and 1999 NTI undergo extensive review by state and local agencies, tribes, industry, EPA, and the public. For more information and references on the development of the 1996 NTI, please go to the following web site: www.epa.gov/ttn/chief/nti/index.html#nti. For more information and references on the development of the 1999 NTI, please go to the following web site: www.epa.gov/ttn/chief/net/index.html#1999

Methods, Assumptions and Suitability: In the intervening years between the update of the NTI, the model EMS-HAP (Emissions Modeling System for Hazardous Air Pollutants) is used to estimate annual emissions of air toxics. EMS-HAP is an emissions processor that performs the steps needed to process an emission inventory for input into the model. These steps include: spatial allocation of area and mobile source emissions from the county level to the census tract level, and temporal allocation of annual emission rates to annually averaged (i.e., same rate for every day of the year) 3-hour emission rates. In addition, EMS-HAP can project future emissions, by adjusting point, area and mobile emission data to account for growth and emission reductions resulting from emission reduction scenarios such as the implementation of the Maximum Achievable Control Technology (MACT) standards. For more information and references on EMS-HAP, please go to the following web site: www.epa.gov/ ttn/scram/tt22.htm#aspen

QA/QC Procedures: The NTI is a database designed to house information from other primary sources. The EPA performs extensive quality assurance/quality control (QA/QC) activities to improve the quality of the emission inventory. The EPA conducts a variety of internal activities to QC NTI data provided by other organizations including: (1) the use of an automated format QC tool to identify potential errors of data integrity, code values, and range checks; (2) use of geographical information system (GIS) tools to verify facility locations; and (3) content analysis by pollutant, source category and facility to identify potential problems with emission estimates such as outliers, duplicate sites, duplicate emissions, coverage of a source category, etc. The content analysis includes a variety of comparative and statistical analyses. The comparative analyses help reviewers prioritize which source categories and pollutants to review in more detail based on comparisons using current inventory data and prior inventories. The statistical analyses help reviewers identify potential outliers by providing the minimum, maximum, average, standard deviation, and selected percentile values based on current data. The EPA is currently developing an automated QC content tool for data providers to use prior to submitting their data to EPA. After investigating errors identified using the automated QC format and GIS tools, the EPA follows specific guidance on augmenting data for missing data fields. This guidance is available at the following web site: www.epa.gov/ttn/chief/emch/invent/qaaugmemo_final.pdf

The NTI database contains data fields that indicate if a field has been augmented and identifies the augmentation method. After performing the content analysis, the EPA contacts data providers to reconcile potential errors. The draft NTI is posted for external review and includes a README file, with instructions on review of data and submission of revisions, documentation, state-by-state modeling files with all modeled data fields, and summary files to assist in the review of the data. One of the summary files includes a comparison of point source data submitted by different organizations. During the external review of the data, state and local agencies, tribes, and industry provide external QA of the inventory. The EPA evaluates proposed revisions from external reviewers and prepares memos for individual reviewers documenting incorporation of revisions and explanations if revisions were not incorporated. All revisions are tracked in the database with the source of original data and sources of subsequent revision.

The external QA and the internal QC of the inventory have resulted in significant changes in the initial emission estimates, as seen by comparison of the initial draft NTI and its final version. For more information on QA/QC of the NTI, please refer to the following web site for a paper presented at the 2002 Emission Inventory Conference in Atlanta. "QA/QC - An Integral Step in the Development of the 1999 National Emission Inventory for HAPs", Anne Pope, et al.
www.epa.gov/ttn/chief/conference/ei11/qa/pope.pdf

Data Quality Review: EPA staff, state and local agencies, tribes, industry and the public have reviewed the NTI. To assist in the review of the 1999 NTI, the EPA provided a comparison of data from the 3 data sources (MACT, TRI, and state, local and Tribal inventories) for each facility. For the 1999 NTI, two periods are available for external review - October 2001 - February 2002 and October 2002 - February 2003.

Both the full draft 1996 national air toxics assessment and several of the individual components of the assessment have been subjected to the scrutiny of leading scientists throughout the country in a process called "scientific peer review." This ensures that EPA uses the best available scientific methods and information. In 2001, EPA's Science Advisory Board (SAB) reviewed the 1996 national-scale assessment. The review was generally supportive of the assessment purpose, methods, and presentation; the committee considers this an important step toward a better understanding of air toxics. Many of the SAB comments related to possible improvements for future assessments (additional national-scale assessments are being planned for the base year 1999 and for every 3 years thereafter) and raised technical issues that would merit further investigation. EPA will follow up on these issues. Additional information is available on the Internet: www.epa.gov/ttn/atw/nata/peer.html.

The following describes the various scientific peer review activities that are associated with the 1996 national air toxics assessment:

- EPA's Science Advisory Board peer-reviewed the ASPEN dispersion model used in the Cumulative Exposure Project (CEP). The Science Advisory Board issued their report in 1996. It can be found at http://www.epa.gov/sab/fiscal96.htm .

- The HAPEM exposure model underwent a peer review by EPA scientists and an external peer review in the summer of 2000. While the peer review identified several limitations inherent in the current methodology, it is still acknowledged as an appropriate tool to help better understand the relation of human exposures to ambient concentration levels.

Data Limitations: The NTI contains data from other primary references. Because of the different data sources, not all information in the NTI has been developed using identical methods. Also, for the same reason, there are likely some geographic areas with more detail and accuracy than others. Because of the lesser level of detail in the 1993 NTI, it is not suitable for input to dispersion models.

New/Improved Data or Systems: The 1996 and 1999 NTI are a significant improvement over the baseline 1993 NTI because of the added facility-level detail (e.g., stack heights, latitude/longitude locations), making it more useful for dispersion model input. Future inventories (2002 and later years) are expected to improve significantly because of increased interest in the NTI by regulatory agencies, environmental interests, and industry, and the greater potential for modeling and trend analysis. During the development of the 1999 NTI, all primary data submitters and reviewers were required to submit their data and revisions to EPA in a standardized format using the Agency's Central Data Exchange (CDX). For more information on CDX, please go the following web site: www.epa.gov/ttn/chief/nif/cdx.html

References: The NTI data and documentation are available at the following sites:
ftp site: ftp://ftp.epa.gov/EmisInventory/
Available inventories: 1996 NTI, 1999 NTI
Contents: Modeling data files for each state
Summary data files for nation
Documentation
README file
Audience: individuals who want full access to NTI files
Air DATA site: www.epa.gov/air/data/
Available inventories: 1996 NTI
Contents: Summary data files
Audience: the public
NEON: http://ttnwww.rtpnc.epa.gov/Neon/
Available inventories: 1996 NTI and draft 2002 version of the 1999 NTI
Contents: Summary data files
Audience: EPA staff
CHIEF: www.epa.gov/ttn/chief
1999 NTI data development materials
1999 Data Incorporation Plan - describes how EPA will compile the 1999 NTI
QC tool for data submitters
Data Augmentation Memo - describes procedures EPA will use to augment data
99 NTI Q's and A's - provides answers to frequently asked questions
NIF (Input Format) files and descriptions
CDX Data Submittal Procedures - instructions on how to submit data using CDX
Training materials on development of HAP emission inventories
Emission factor documents, databases, and models
Audience: state and local agencies, tribes, industry, EPA, and the public

Research

EPA's Air Toxics Research Program works with other Federal agencies, such as the National Institute of Environmental Health Sciences (NIEHS) and the National Toxicology Program (NTP), on an ad hoc basis to identify and coordinate research needs. The Health Effects Institute conducts complementary research related to air toxics that is coordinated with EPA activities.

Statutory Authorities

Clean Air Act Title I, Part A and Part D, Subparts 3 and 5 (42 U.S.C. 7401-7431, 7512-7512a, 7514-7514a) (15 U.S.C. 2605)

Clean Air Act Amendments, Title II (42 U.S.C. 7521-7590)

Clean Air Act Amendments, Title IV (42 U.S.C. 7651-7661f)

Research

Clean Air Act (CAA) (42 U.S.C. 7401-7671q)

Objective 3: Reduce Acid Rain.

By 2005, reduce ambient nitrates and total nitrogen deposition to 1990 levels. By 2010, reduce ambient sulfates and total sulfur deposition by up to 30 percent from 1990 levels.

Resource Summary
(Dollars in Thousands)

	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Reduce Acid Rain.	**$21,563.8**	**$21,097.8**	**$21,230.8**	**$133.0**
Environmental Program & Management	$15,383.7	$15,278.9	$15,411.9	$133.0
Science & Technology	$4,321.0	$3,991.2	$3,991.2	$0.0
State and Tribal Assistance Grants	$1,859.1	$1,827.7	$1,827.7	$0.0
Total Workyears	90.9	91.5	87.3	-4.2

Key Program
(Dollars in Thousands)

	FY 2002 Enacted	FY 2003 Pres. Bud.	FY 2004 Request	FY 2004 Req. v. FY 2003 Pres Bud
Acid Rain -CASTNet	$3,991.2	$3,991.2	$3,991.2	$0.0
Acid Rain -Program Implementation	$12,500.2	$12,790.4	$12,812.7	$22.3
Air, State, Local and Tribal Assistance Grants: Other Air Grants	$1,827.7	$1,827.7	$1,827.7	$0.0
Congressionally Mandated Projects	$250.0	$0.0	$0.0	$0.0
Facilities Infrastructure and Operations	$1,311.3	$1,292.6	$1,357.1	$64.5
Legal Services	$834.7	$923.5	$957.3	$33.8
Management Services and Stewardship	$276.0	$272.4	$284.8	$12.4

Annual Performance Goals and Measures

Reduce SO2 Emissions

In 2004 Maintain or increase annual SO2 emission reduction of approximately 5 million tons from the 1980 baseline. Keep annual emissions below level authorized by allowance holdings and make progress towards achievement of Year 2010 SO2 emissions cap for utilities.

In 2003 Maintain or increase annual SO2 emission reduction of approximately 5 million tons from the 1980 baseline. Keep annual emissions below level authorized by allowance holdings and make progress towards achievement of Year 2010 SO2 emissions cap for utilities.

In 2002 On track to ensure that EPA maintains or increases annual SO2 emission reduction of approximately 5 million tons from the 1980 baseline. Keep annual emissions below level authorized by allowance holdings and make progress towards achievement of Year 2010 SO2 emissions cap for utilities.

Performance Measures:	FY 2002 Actuals	FY 2003 Pres. Bud.	FY 2004 Request	
SO2 Emissions	Data Lag	5,000,000	5,000,000	Tons Reduced

Baseline: The base of comparison for assessing progress on the annual performance goal is the 1980 emissions baseline. The 1980 SO2 emissions inventory totals 17.5 million tons for electric utility sources. This inventory was developed by National Acid Precipitation Assessment Program (NAPAP) and used as the basis for reductions in Title IV of the Clean Air Act Amendments. This data is also contained in EPA's National Air Pollutant Emissions Trends Report. A statutory SO2 emission cap for year 2010 and later is at 8.95 million tons which is approximately 8.5 million tons below 1980 emissions level. "Allowable SO2 emission level" consists of allowance allocations granted to sources each year under several provisions of the Act and additional allowances carried over, or banked, from previous years.

Reduce NOx Emissions

In 2004 2 million tons of NOx from coal-fired utility sources will be reduced from levels that would have been emitted without implementation of Title IV of the Clean Air Act Amendments.

In 2003 2 million tons of NOx from coal-fired utility sources will be reduced from levels that would have been emitted without implementation of Title IV of the Clean Air Act Amendments.

In 2002 On track to ensure that 2 million tons of NOx from coal-fired utility sources are reduced from levels that would have been emitted without implementation of Title IV of the Clean Air Act Amendments.

Performance Measures:	FY 2002 Actuals	FY 2003	FY 2004 Request	
NOx Reductions	Data Lag	2,000,000	2,000,000	Tons Reduced

Baseline: Performance Baseline: The base of comparison for assessing progress on this annual performance goal is emissions that would have occurred in the absence of Title IV of the Clean Air Act Amendments. These emissions levels are calculated using actual annual heat input and the baseline (uncontrolled) NOx emission rates by boiler type from the preamble to the final rule (61 FR 67112, December 19, 1996).

Verification and Validation of Performance Measures

FY 2004 Performance Measure: SO_2 and NO_X emission reductions

Performance Database: Emissions Tracking System (ETS), SO_2 and NO_X emissions collected by Continuous Emission Monitoring Systems (CEMS) or equivalent continuous monitoring methods, CASTNet (dry deposition), National Atmospheric Deposition Program (NADP) (wet deposition).

Data Source: On a quarterly basis, ETS receives and processes hourly measurements of SO_2, NO_x, volumetric flow, CO_2, and other emission-related parameters from more than 2,500 fossil fuel-fired utility units affected under the Title IV Acid Rain Program. For the 5-month ozone season (May 1 - September 30), ETS receives and processes hourly NO_x measurements from electric generation units (EGUs) and certain large industrial combustion units affected by the Ozone Transport Commission (OTC) NO_x Budget Program, the NO_x SIP Call, and/or the Section 126 of the Clean Air Act controlling for regional transport of ozone in the eastern United States In 2004, the initial compliance year for the NO_x SIP Call, up to 2000 units in as many as 20 States and D.C. will be reporting seasonal NO_x data to ETS. Over 900 units have been reporting these data since 1999 under the OTC NO_x Budget Program.

CASTNet measures particle and gas acidic deposition chemistry. Specifically, CASTNet measures sulfate and nitrate dry deposition and meteorological information at approximately 70 active monitoring sites. CASTNet is primarily an eastern, long-term dry deposition network funded, operated and maintained by EPA=s Office of Air and Radiation (OAR).

The NADP is a national long-term wet deposition network that measures precipitation chemistry and provides long-term geographic and temporal trends in concentration and deposition of major cations and anions. Specifically, NADP provides measurements of sulfate and nitrate wet deposition at approximately 200 active monitoring sites. EPA, along with several other Federal agencies, states, and other private organizations, provide funding and support for NADP. The Illinois State Water Survey/University of Illinois maintains the NADP database.

Methods, Assumption, and Suitability: Promulgated methods are used to aggregate data across all United States utilities for each pollutant and related source operating parameters.

QA/QC Procedures: QA/QC requirements dictate performing a series of quality assurance tests of CEMS performance. For these tests, emissions data are collected under highly structured, carefully designed testing conditions, which involve either high quality standard reference materials or multiple instruments performing simultaneous emission measurements. The resulting data are screened and analyzed using a battery of statistical procedures, including one that tests for systematic bias. If a CEM fails the bias test, indicating a potential for systematic underestimation of emissions, the source of the error must be identified and corrected or the data are adjusted to minimize the bias. Further information available on the Internet: http://www.epa.gov/airmarkets/reporting/arp/closure2001.html and http://www.epa.gov/airmarkets/monitoring/bias/index.html

CASTNet established a Quality Assurance Project Plan (QAPP) in November 2001; a copy of which is available at http://www.epa.gov/castnet/library/qapp.html The QAPP contains data quality objectives and quality control procedures for accuracy and precision

NADP has established data quality objectives and quality control procedures for accuracy, precision and representation, available on the Internet: http://nadp.sws.uiuc.edu/QA/. The intended use of these data is to establish spatial and temporal trends in wet deposition and precipitation chemistry.

Data Quality Review: The ETS provides instant feedback to sources on data reporting problems, format errors, and inconsistencies. The electronic data file QA checks are described at http://www.epa.gov/airmarkets/reporting/arp/closure2001.html under EPA=s *Quarterly Report Review Process*. All quarterly reports are analyzed to detect deficiencies and to identify reports that must be resubmitted to correct problems. EPA also identifies reports that were not submitted by the appropriate reporting deadline. Revised quarterly reports must be obtained from sources by a specified deadline to correct deficiencies found during the Data Review process. All data are reviewed, and preliminary and final emissions data reports are prepared for public release and compliance determination.

CASTNet underwent formal peer review in 1997 by a panel of scientists from EPA and NOAA. Findings are documented in *Examination of CASTNet: Data, Results, Costs, and Implications* (United States EPA, Office of Research and Development, National Exposure Research Laboratory, February 1997).

The NADP methods of determining wet deposition values have undergone extensive peer review, handled entirely by the NADP housed at the Illinois State Water Survey/University of Illinois. Assessments of changes in NADP methods are developed primarily through the academic community and reviewed through the technical literature process.

Data Limitations: In order to improve the spatial resolution of CASTNet, additional monitoring sites are needed.

Error Estimate: None

New/Improved Data or Systems: None planned

References: For additional information about CASTNet, see http://www.epa.gov/castnet/ and for NADP, see http://nadp.sws.uiuc.edu/ .
For a description of EPA's Acid Rain program, see http://www.epa.gov/airmarkets/acidrain/ and in the electronic Code of Federal Regulations at http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-C.htm (40 CFR parts 72-78.)

Coordination with Other Agencies

EPA participates with NAPAP, which coordinates Federal acid rain research and monitoring under the auspices of the National Science and Technology Council Committee on Environment and Natural Resources. As required by Title IX of the 1990 Clean Air Act Amendments, NAPAP prepares a biennial report that evaluates the costs, benefits, and effectiveness of the Acid Deposition Control Program under Title IV of the 1990 Clean Air Amendments. The NAPAP assessment is a multi-agency effort requiring cooperation and coordination among EPA, the Department of Energy, the Department of Agriculture, the Department of the Interior, the National Aeronautics and Space Administration, and the National Oceanic and Atmospheric Administration.

Statutory Authorities

Clean Air Act Amendments, Title I (42 U.S.C. 7401-7514a)
Clean Air Act Amendments, Title IV (42 U.S.C. 7651-7661f)
Clean Air Act Amendments, Title IX (42 U.S.C. 7403-7404)